CLAIMS:

1. A method of recording marks representing data in a recording medium, said recording medium comprising an information layer having a phase which is reversibly changeable between a crystal phase and an amorphous phase, by irradiating the information layer with a pulsed radiation beam, each mark being written by a sequence of pulses comprising at least one write pulse, the written marks being erasable by irradiating the information layer with a radiation beam having an erase power level (e), a first write pulse of a sequence of pulses being preceded by a cooling pulse having a cooling power level (c) which is lower than the erase power level (e), said radiation beam being generated by a radiation source, *characterized in that* a last write pulse of a sequence is directly followed by a rear heating pulse having a rear heating power level (r), the rear heating power level (r) being higher than the erase power level (e).

2. A method as claimed in claim 1, *characterized in that* the rear heating power level (r) of the rear heating pulse is dependent on properties of the recording medium.

3. A method as claimed in claim 1 for recording marks having lengths of nT, where T represents the length of one period of a reference clock in a data signal and n represents a predetermined natural number larger than 1, each mark being written by a sequence of (n-1) write pulses, *characterized in that* the rear heating pulse has a first rear heating power level (r_1) when n=2, a second rear heating power level (r_2) when n=3, and a third rear heating power level (r_3) when $n \geq 4$, the first rear heating power level (r_1), the second rear heating power level (r_2), and the third rear heating power level (r_3) being dependent on properties of the recording medium.

4. A method as claimed in claim 1, 2 or 3, *characterized in that* the first write pulse of a sequence is directly preceded by a front heating pulse having a front heating power level (f), the front heating pulse being directly preceded by the cooling pulse having a cooling power level (c), the front heating power level (f) being higher than the erase power level (e).

5. A method as claimed in claim 4, *characterized in that* the front heating power level (f) of the front heating pulse is dependent on properties of the recording medium.

6. A method as claimed in claim 4 for recording marks having lengths of nT, where T represents the length of one period of a reference clock in a data signal and n represents a predetermined natural number larger than 1, each mark being written by a sequence of (n-1) write pulses, *characterized in that* the front heating pulse has a first front heating power level (f_1) when n=2, a second front heating power level (f_2) when n=3, and a third front heating power level (f_3) when $n \geq 4$, the first front heating power level (f_1), the second front heating power level (f_2), and the third front heating power level (f_3) being dependent on properties of the recording medium.

7. A method as claimed in claim 1, 2, 3, 4, 5 or 6, *characterized in that* the cooling power level (c) of the cooling pulse is dependent on properties of the radiation source and the recording medium.

8. A method as claimed in claim 4 for recording marks having lengths of nT, where T represents the length of one period of a reference clock in a data signal and n represents a predetermined natural number larger than 1, each mark being written by a sequence of (n-1) write pulses, *characterized in that* the cooling pulse has a first cooling power level (c_1) when n=2, a second cooling power level (c_2) when n=3, and a third cooling power level (c_3) when $n \geq 4$, the first cooling power level (c_1), the second cooling power level (c_2), and the third cooling power level (c_3) being dependent on properties of the radiation source and the recording medium.

9. A method as claimed in claim 1, 2 or 3, *characterized in that* the rear heating pulse includes a front portion having the rear heating power level (r), and a rear portion having a power level which is lower than the erase power level (e).

10. A method of recording marks representing data in a recording medium, said recording medium comprising an information layer having a phase which is reversibly changeable between a crystal phase and an amorphous phase, by irradiating the information layer with a pulsed radiation beam, each mark having a length of nT, where T represents the length of one period of a reference clock in a data signal and n represents a predetermined

natural number larger than 1, the marks being written by a sequence of pulses comprising (n-1) write pulses, the written marks being erasable by irradiating the information layer with a radiation beam having an erase power level (e), a first write pulse of a sequence of pulses being preceded by a cooling pulse having a cooling power level (c) which is lower than the erase power level (e), said radiation beam being generated by a radiation source, *characterized in that* the cooling pulse has a first cooling power level (c_1) when n=2, a second cooling power level (c_2) when n=3, and a third cooling power level (c_3) when n≥4, the first cooling power level (c_1), the second cooling power level (c_2), and the third cooling power level (c_3) being dependent on properties the radiation source and of the recording medium.

11. A method as claimed in claim 10, *characterized in that* the first cooling power level (c_1) is substantially equal to the second cooling power level (c_2) and the third cooling power level (c_3).

12. A recording device for recording data in the form of marks on a recording medium, said recording medium comprising an information layer having a phase which is reversibly changeable between a crystal phase and an amorphous phase, by irradiating the information layer with a pulsed radiation beam, the recorded marks being erasable by means of irradiating the information layer with a radiation beam having an erase power level (e), the device comprising a radiation source providing the radiation beam and a control unit for controlling the power of the radiation beam, the control unit being operative for providing a sequence of write pulses for writing a mark and controlling the power of the radiation beam such that it has a cooling power level (c) which is lower than the erase power level (e) preceding a first write pulse of a sequence of pulses, *characterized in that* the control unit is operative for controlling the power of the radiation beam such that it has a rear heating pulse having a rear heating power level (r) directly following a last write pulse of a sequence, the rear heating power level (r) being higher than the erase power level (e).

13. A recording device as claimed in claim 12, *characterized in that* the recording device comprises means for determining a value for the rear heating power level (r), which value for the rear heating power level (r) depends on properties of the recording medium.

14. A recording device as claimed in claim 12 for recording marks having lengths of nT, where T represents the length of one period of a reference clock in a data signal and n

represents a predetermined natural number larger than 1, *characterized in that* the recording device comprises means for determining a first value for the rear heating power level (r_1) when n=2, a second value for the rear heating power level (r_2) when n=3, and a third value for the rear heating power level (r_3) when n≥4, said first value for the rear heating power level (r_1), second value for the rear heating power level (r_2) and third value for the rear heating power level (r_3) being dependent on properties of the recording medium.

15. A recording device as claimed in claim 12, 13 or 14, *characterized in that* the control unit is operative for controlling the power of the radiation beam such that it has a front heating pulse having a front heating power level (f) directly preceding a first write pulse and a cooling pulse having a cooling power level (c) directly preceding the front heating pulse, the front heating power level (f) being higher than the erase power level (e) and the cooling power level (c) being lower than the erase power level (e).

16. A recording device as claimed in claim 15, *characterized in that* the recording device comprises means for determining a value for the front heating power level (f), which value for the front heating power level (f) depends on properties of the recording medium.

17. A recording device as claimed in claim 15 for recording marks having lengths of nT, where T represents the length of one period of a reference clock in a data signal and n represents a predetermined natural number larger than 1, *characterized in that* the recording device comprises means for determining a first value for the front heating power level (f_1) when n=2, a second value for the front heating power level (f_2) when n=3, and a third value for the front heating power level (f_3) when n≥4, said first value for the front heating power level (f_1), second value for the front heating power level (f_2) and third value for the front heating power level (f_3) being dependent on properties of the recording medium.

18. A recording device as claimed in claim 15, *characterized in that* the recording device comprises means for determining a value for the cooling power level (c), which value for the cooling power level (c) depends on properties of the recording medium.

19. A recording device as claimed in claim 15 for recording marks having lengths of nT, where T represents the length of one period of a reference clock in a data signal and n represents a predetermined natural number larger than 1, *characterized in that* the recording

device comprises means for determining a first value for the cooling power level (c_1) when n=2, a second value for the cooling power level (c_2) when n=3, and a third value for the cooling power level (c_3) when n≥4, said which first value for the cooling power level (c_1), second value for the cooling power level (c_2) and third value for the cooling power level (c_3) being dependent on properties of the radiation source and the recording medium.

20. A recording device as claimed in claim 12, 13 or 14, *characterized in that* the control unit is operative for providing the rear heating pulse and controlling the power of the radiation beam such that the rear heating pulse includes a front portion having the rear heating power level (r), and a rear portion having a power level which is lower than the erase power level (e).

21. A recording device for recording data in the form of marks on a recording medium, said recording medium comprising an information layer having a phase which is reversibly changeable between a crystal phase and an amorphous phase, and said marks having lengths of nT, where T represents the length of one period of a reference clock in a data signal and n represents a predetermined natural number larger than 1, by irradiating the information layer by a pulsed radiation beam, the recorded marks being erasable by irradiating the information layer with a radiation beam having an erase power level (e), the device comprising a radiation source providing the radiation beam and a control unit for controlling the power of the radiation beam, the control unit being operative for providing a sequence of write pulses for writing a mark and controlling the power of the radiation beam such that it has a cooling power level (c) which is lower than the erase power level (e) preceding a first write pulse of a sequence of pulses, *characterized in that* the recording device comprises means for determining a first value for the cooling power level (c_1) when n=2, a second value for the cooling power level (c_2) when n=3, and a third value for the cooling power level (c_3) when n≥4, said first value for the cooling power level (c_1), second value for the cooling power level (c_2) and third value for the cooling power level (c_3) being dependent on properties of the radiation source and the recording medium.

22. A recording device as claimed in claim 21, *characterized in that* the first value for the cooling power level (c_1) is substantially equal to the second value for the cooling power level (c_2) and the third value for the cooling power level (c_3).

23. A recording medium for use in a recording device as claimed in claim 13 or 14, said recording medium comprising an information layer having a phase which is reversibly changeable between a crystal phase and an amorphous phase, and comprising an area containing recording parameters, *characterized in that* the area containing recording parameters comprises a value for the rear heating power level (r).

24. A recording medium for use in a recording device as claimed in claim 16 or 17, said recording medium comprising an information layer having a phase which is reversibly changeable between a crystal phase and an amorphous phase, and comprising an area containing recording parameters, *characterized in that* the area containing recording parameters comprises a value for the front heating power level (f).

25. A recording medium for use in a recording device as claimed in claim 18 or 19, said recording medium comprising an information layer having a phase which is reversibly changeable between a crystal phase and an amorphous phase, and comprising an area containing recording parameters, *characterized in that* the area containing recording parameters comprises a value for the cooling power level (c).